Commissural Prolapse of the Mitral Valve

Identified on 3-Dimensional Transesophageal Echocardiography

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A 62-year-old man presented with progressive exertional dyspnea and a holosystolic murmur. A transthoracic echocardiogram showed severe eccentric mitral regurgitation (Fig. 1). A 2-dimensional transesophageal echocardiogram (2D TEE) showed possible anterior mitral leaflet perforation (Fig. 2). The patient was referred for surgery. Intraoperative, real-time 3-dimensional (3D) TEE clearly showed isolated posteromedial commissural prolapse involving the anterior and posterior leaflets (A3 and P3 scallops) (Fig. 3). The cause was fibroelastic deficiency that resulted in rupture of the commissural chordae (Fig. 4), which was confirmed upon surgical inspection (Fig. 5). The mitral valve was successfully repaired.

Comment

Commissural prolapse, an infrequent form of mitral valve prolapse, is difficult to diagnose with use of 2D echocardiography. The prolapse typically affects the posteromedial commissure.[1] The echocardiographic appearance of this entity can mimic leaflet perforation.[2] Determination of leaflet, chordal, or papillary muscle involvement by means of careful preoperative imaging evaluation can play a crucial role in surgical

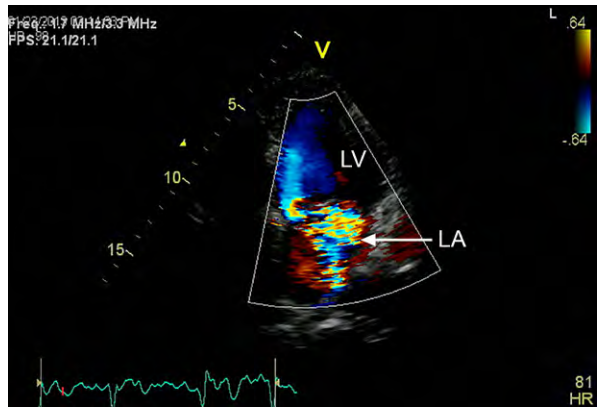

Fig. 1 *Transthoracic echocardiogram with color-flow Doppler shows severe mitral regurgitation.*

LA = left atrium; LV = left ventricle

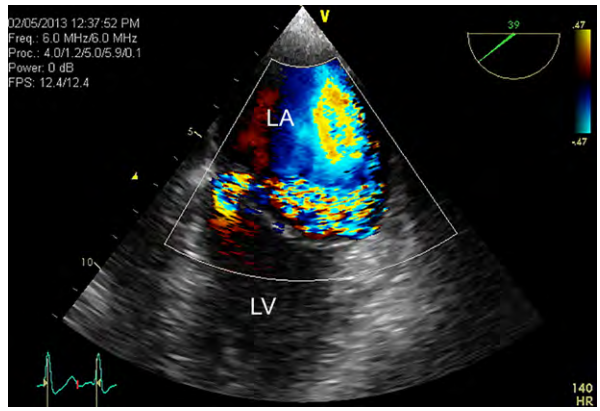

Fig. 2 *Two-dimensional transesophageal echocardiogram with color-flow Doppler suggests anterior mitral leaflet perforation.*

LA = left atrium; LV = left ventricle

Supplemental motion image is available for Figure 2.

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staging and planning. Real-time 3D TEE has the potential to enable accurate evaluation and diagnosis and thereby lead to improved surgical outcomes.

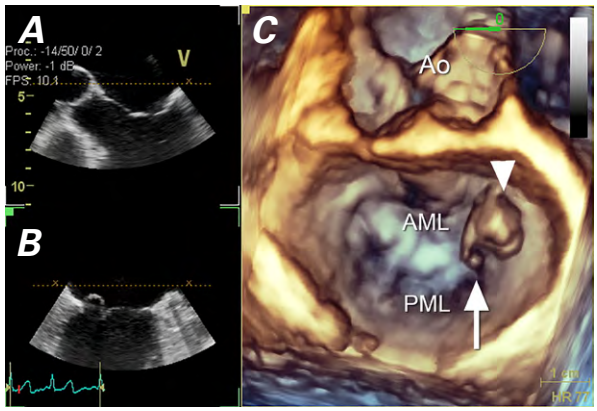

Fig. 3 *Two-dimensional transesophageal echocardiograms of the mitral valve at **A**) 0° (4-chamber view) and **B**) approximately 90° (2-chamber view). **C**) Real-time 3-dimensional intraoperative echocardiographic view of the mitral valve (wide-sector acquisition mode) shows prolapse of the posteromedial commissure (arrowhead) with chordal rupture (arrow).*

AML = anterior mitral leaflet; Ao = aortic valve; PML = posterior mitral leaflet

Supplemental motion image is available for Figure 3.

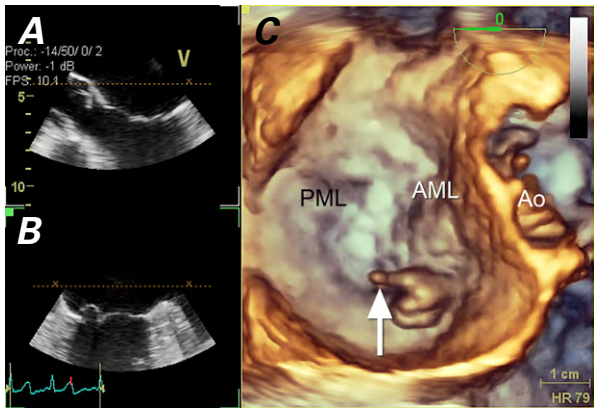

Fig. 4 *Two-dimensional transesophageal echocardiograms of the mitral valve at **A**) 0° (4-chamber view) and **B**) approximately 90° (2-chamber view). **C**) Real-time 3-dimensional echocardiogram (wide-sector acquisition mode) shows an angulated view of the mitral valve, with 90° clockwise rotation, indicating posteromedial commissural prolapse with chordal rupture (arrow).*

AML = anterior mitral leaflet; Ao = aortic valve; PML = posterior mitral leaflet

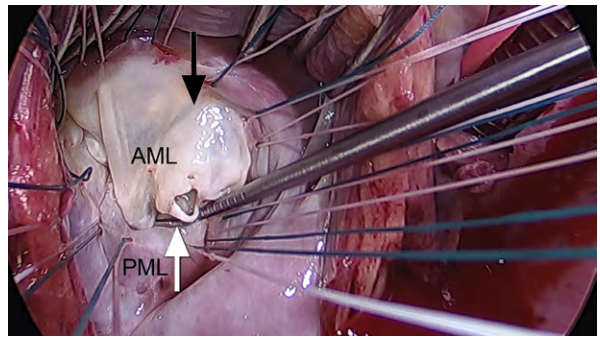

Fig. 5 *Intraoperative photograph of the mitral valve shows posteromedial commissural prolapse (black arrow) with chordal rupture (white arrow).*

AML = anterior mitral leaflet; PML = posterior mitral leaflet

References

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